

Claims

1. A device for sealing a puncture tract by forming and extruding an autologous plug within the puncture tract, wherein the puncture tract is disposed within tissue proximal to a vessel, the device comprising:

a housing having a lumen adapted to mix a volume of blood with a blood congealing agent;

a closure element configured to be inserted into the puncture tract and to isolate the mixture of the volume of blood and the blood congealing agent from the vessel during formation of the autologous plug from the volume of blood by action of the blood congealing agent; and

a plunger disposed for translation within the lumen to extrude the autologous plug formed within the lumen.

2. The device of claim 1, wherein the housing comprises a second lumen to facilitate placement of a distal end of the device.

3. The device of claim 2, wherein the second lumen is disposed within the plunger.

4. The device of claim 1, 2 or 3, wherein the autologous plug formed in the lumen has a length and a form factor that causes the autologous plug to engage tissue surrounding the puncture tract after ejection by the plunger into the puncture tract.

5. The device of claim 1, 2, 3 or 4, wherein the closure element comprises a pledget and thread.

6. The device of claim 5, wherein at least one of the pledget and the thread is biodegradable.

7. The device of any one of claims 1 to 6, wherein the closure element comprises a selectively closable iris.

8. The device of claim 7, wherein the selectively closable iris comprises a plate having a plurality of tracks and an opening disposed therethrough, and a plurality of blades operably engaged to the plurality of tracks.

9. The device of any one of claims 1 to 8, wherein the closure element comprises first and second plates, each of the first and second plates having a plurality of through-wall slots, the first and second plates being relatively rotatable to selectively align the pluralities of through-wall slots.

10. The device of any one of claims 1 to 9, wherein the closure element comprises a membrane that is permeable to blood and impermeable to the blood congealing agent.

11. The device of any one of claims 1 to 10, wherein the blood congealing agent is pre-disposed within the lumen.

12. The device of claim 11, wherein the blood congealing agent is coated onto an interior surface of the lumen.

13. The device of any one of claims 1 to 12, wherein the blood congealing agent is introduced into

the lumen subsequent to actuation of the closure element.

14. The device of claim 11, 12 or 13, wherein the blood congealing agent comprises a platinum wire.

15. The device of claim 11, 12, 13 or 14, wherein the blood congealing agent comprises a thermo-resistive wire.

16. The device of any one of claims 1 to 15, wherein the blood congealing agent is chosen from the group consisting of thrombin, fibrin, human factor VIII, and combinations thereof.

17. The device of any one of claims 1 to 16, wherein the blood congealing agent comprises a matrix.

18. The device of claim 17, wherein the matrix is chosen from the group consisting of gauze, biocompatible foam, and spun fiber.

19. The device of claim 17 or 18, wherein the matrix is biodegradable.

20. The device of claim 17, 18 or 19, wherein the matrix comprises at least one channel disposed therethrough.